REMARKS/ARGUMENTS

Claims 1, 2, 4, 6-15, 17, 19-26, 34 and 36-56 are currently pending in this application. Claims 3, 5, 16, 18, 27-33 and 35 are cancelled without prejudice. Claims 1, 2, 4, 6, 7, 13-15, 17, 19, 20, 26, 34, 36, 37 and 43 have been amended and new claims 44-56 have been added to more distinctly claim the subject matter which the Applicants regard as the invention. The Applicants submit that no new matter has been added to the application by the Amendment.

Claim Rejections

Claims 1, 2, 7-10, 14, 15, 20-23, 34 and 37-40 are rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent Application Publication No. 2004/0219884 (Mo et al., hereinafter referred to as "Mo"). Claims 3-6, 11-13, 16-19, 24-26, 35, 36 and 41-43 are rejected under 35 U.S.C. §103(a) as being unpatentable over Mo in view of U.S. Patent No. 6,313,703 (Wright et al., hereinafter referred to as "Wright").

The present invention is an apparatus, (i.e., a digital baseband (DBB) transmitter, a wireless transmit/receiver unit (WTRU), an integrated circuit (IC)), which includes a plurality of digital compensation modules used to correct radio frequency (RF) parameter deficiencies that occur in an analog radio transmitter. The analog radio transmitter includes at least one of a temperature sensor and a current bias sensor. The apparatus also includes a memory for storing a plurality of look up tables (LUTs) and a controller in communication with the analog radio transmitter and each of the digital compensation modules.

In one embodiment of the present invention, the temperature sensor monitors a temperature reading associated with the analog radio transmitter, and a

particular one of the LUTs is selected from the memory to set up parameters for at least one of the digital compensation modules in response to the temperature reading monitored by the temperature sensor.

In another embodiment of the present invention, the current bias sensor monitors a current bias reading associated with the analog radio transmitter, and a particular one of the LUTs is selected from the memory to set up parameters for at least one of the digital compensation modules in response to the current bias reading monitored by the current bias sensor.

In another embodiment of the present invention, the apparatus includes an analog radio transmitter and a digital direct current (DC) offset compensation module. The analog radio transmitter includes a modulator prone to a carrier leakage deficiency. The digital DC offset compensation module has two signal inputs including an in-phase (I) signal component and a quadrature (Q) signal component. A minimum detected reading associated with each of the signal inputs is determined, first and second DC offset compensation values are determined based on the minimum detected readings, and the digital DC offset compensation module is configured to eliminate carrier leakage associated with the modulator by adjusting the respective DC levels of the two signal inputs based on the first and second DC offset compensation values. The modulator may have a local oscillator (LO) frequency at which the minimum detected readings are determined.

Claims 1, 14, and 34 have been amended to incorporate features previously recited in claims 3, 5, 16 and 18. Mo discloses a method and system for measuring receiver mixer IQ mismatch.

As conceded by the Examiner, Mo does not disclose using a temperature sensor for monitoring a temperature reading associated with an analog radio transmitter (previously recited in claims 3 and 16), or a memory for storing a

plurality of LUTs (previously recited in claims 5 and 18). Instead, the Examiner relies on the teachings of Wright which discloses, at column 30, lines 50-62, that "the physical characteristics of analog components may change as a function of temperature." Thus, for example, if a resistor is subjected to high temperatures, its resistance may change as a result of being subjected to the high temperatures. If anything, Mo implies that the characteristics, (e.g., the resistance), not the temperature, should be monitored. Mo fails to teach of suggest using a temperature sensor in an analog radio transmitter to monitor a temperature reading associated with the analog radio transmitter.

Furthermore, the Examiner asserts that Wright discloses, at column 16, lines 55-67 and column 17, lines 1-5, a memory for storing a plurality of LUTs, wherein one of the LUTs is selected in response to a temperature reading monitored by a temperature sensor in an analog radio transmitter. The Applicants strongly disagree. Wright discloses using a memory LUT containing digital samples of a sine wave, but nowhere in the portion of Wright cited by the Examiner is temperature referred to. Column 17, line 1 refers to a phase, not a temperature, of "90 degrees". Wright only discloses using a single LUT and fails to teach or suggest selecting a particular one of a plurality of LUTs based on a temperature reading associated with the analog radio transmitter.

Since neither of Mo and Wright, alone or in combination, disclose all of the features recited in claims 1, 14 and 34, the Applicants submit that claims 1, 14 and 34 are patentable over the prior art of record.

With respect to claims 2, 4, 6-13, 15, 17, 19-26 and 36-43, these claims are dependent upon claims 1, 14 and 34, respectively, and are believed to be allowable for the same reasons provided above.

In view of the arguments presented above, the withdrawal of the rejections 35 U.S.C. §102(b) and 35 U.S.C. §103(a) is respectfully requested.

New Claims 44-49

The new claims 44-49 recite an apparatus, (i.e., a DBB transmitter, a WTRU, an IC), which includes the digital DC offset compensation module recited in claims 9, 22 and 39, for which the Examiner asserts that Mo discloses, in paragraphs [0045] and [0046], an analog radio transmitter including a modulator prone to a carrier leakage deficiency and a digital direct current (DC) offset compensation module having two signal inputs including an in-phase (I) signal component and a quadrature (Q) signal component, wherein a minimum detected reading associated with each of the signal inputs is determined, first and second DC offset compensation values are determined based on the minimum detected readings, and the digital DC offset compensation module is configured to eliminate carrier leakage associated with the modulator by adjusting the respective DC levels of the two signal inputs based on the first and second DC offset compensation values.

The Applicants have reviewed paragraphs [0045] and [0046] of Mo that was cited by the Examiner to support the rejection of claims 9, 22 and 39, and could find no mention of the above-identified features. Specifically, Mo does not teach or suggest determining first and second DC offset compensation values based on minimum detected readings. Furthermore, Mo does not teach or suggest eliminating the carrier leakage of a modulator in an analog radio transmitter by adjusting respective DC levels based on the first and second DC offset compensation values.

Since Mo fails to disclose all of the features recited in claims 44-49, the Applicants submit that claims 44-49 are patentable over the prior art of record.

New Claims 50-56

The new claims 50-56 recite an apparatus, (i.e., a DBB transmitter, a WTRU, an IC), which includes the features previously recited in claims 4, 5, 17 and 18.

As conceded by the Examiner with respect to the rejection of claims 4, 5, 17 and 18, Mo does not disclose using a bias current sensor for monitoring a bias current reading associated with an analog radio transmitter (previously recited in claims 4 and 17), or a memory for storing a plurality of LUTs (previously recited in claims 5 and 18). Instead, the Examiner relies on the teachings of Wright which discloses, at column 37, lines 39-49, that "bias re-optimization can be set up without potentially undesirable effects...and fine tuning of bias can be performed. Mo fails to teach of suggest using a bias current sensor in an analog radio transmitter to monitor a bias current reading associated with the analog radio transmitter.

Furthermore, the Examiner asserts that Wright discloses, at column 16, lines 55-67 and column 17, lines 1-5, a memory for storing a plurality of LUTs, wherein one of the LUTs is selected in response to a parameter reading monitored by a sensor in an analog radio transmitter. The Applicants strongly disagree. Wright discloses using a memory LUT containing digital samples of a sine wave, but nowhere in the portion of Wright cited by the Examiner is a monitored parameter referred to. Wright only discloses using a single LUT and fails to teach or suggest selecting a particular one of a plurality of LUTs based on a bias current reading associated with the analog radio transmitter.

Since neither of Mo and Wright, alone or in combination, disclose all of the features recited in claims 50-56, the Applicants submit that claims 50-56 are patentable over the prior art of record.

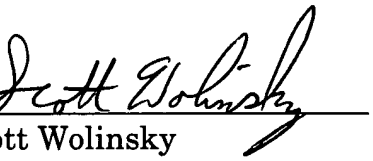
Conclusion

If the Examiner believes that any additional minor formal matters need to be addressed in order to place this application in condition for allowance, or that a telephone interview will help to materially advance the prosecution of this application, the Examiner is invited to contact the undersigned by telephone at the Examiner's convenience.

In view of the foregoing amendment and remarks, Applicants respectfully submit that the present application, including claims 1, 2, 4, 6-15, 17, 19-26, 34 and 36-56, is in condition for allowance and a notice to that effect is respectfully requested.

Respectfully submitted,

Demir et al.

By 
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